

REMARKS

The obviousness-type double patenting rejection of claims 3 and 6 over claim 12 of US 7,385,091 is believed obviated by the accompanying Terminal Disclaimer.

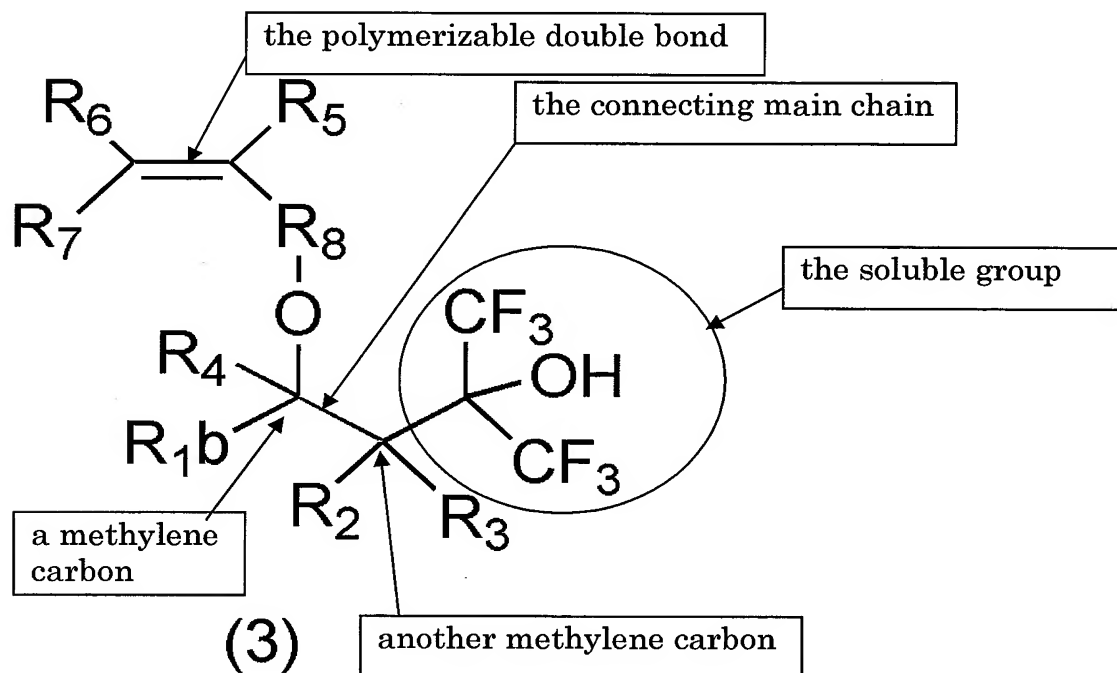
The rejection of claims 3, 6, 9-12, 18 and 20 under 35 U.S.C. §103(a) over Ito et al., *J. Photopolymer Sci and Tech.*, 16(4):523-36 (2003) is respectfully traversed for the following reasons.

As stated in the penultimate paragraph on page 4 of the Office Action, the claimed compound of formula (3) may be in a condition that R₅ is a trifluoromethyl group (-CF₃), R₂, R₃, R₄ and R₇ are each hydrogen atoms, R₈ is a carbonyl group (>C=O) or a single bond (-) and R_{1b} is a norbornyl group (-C₇H₁₁). Even in this condition, however, the claimed compound of formula (3) is significantly different from the compounds of formulas (I) and (II) of Ito et al. (see NBHFATFMA and VENBHFA in Fig. 1 on page 524).

In formulas (I) and (II) of Ito et al., the alicyclic structure (i.e., the norbornylene group -C₇H₁₀-) constitutes a stem of a connecting group that connects the polymerizable double bond (i.e., the double bond of CH₂=C(CF₃)- in formula (I) or that of CH₂=CH- in formula (II) of Ito et al.), which results in a main chain of the resulting polymer, with the soluble group (i.e., -C(CF₃)₂OH in the formula (I) or (II) of Ito et al.). In other words, in formulas (I) and (II) of Ito et al., the alicyclic structure is directly in a connecting main chain that connects the polymerizable double bond with the soluble group.

In contrast, in formula (3) of claim 3 (see the following formula (3) with the arrowed explanations), the alicyclic structure (i.e., the norbornyl group -C₇H₁₁ represented by R_{1b}) is not in a connecting main chain that connects the polymerizable double bond (i.e., the double bond of CR₆R₇=CR₅R₈), which results in a main chain of the resulting polymer (see formula (10) of claim 10), with the soluble group (i.e., -C(CF₃)₂OH). In other words, this connecting main chain of formula (3) of claim 3 is a chain structure not containing the alicyclic structure. That is, the alicyclic structure R_{1b} is attached to a methylene carbon (i.e., the carbon of -COR₄R_{1b}) of the connecting main chain. That is to say, the alicyclic

structure R_{1b} is introduced into a side chain of the connecting main chain. This is clearly different from that (i.e., a connecting main chain containing the alicyclic structure group) of formulas (I) and (II) of Ito et al. and brings about an unexpected advantage.



The fluorine-containing cyclic compound (monomer) of claim 3 is useful for preparing a fluorine-containing polymer compound of claim 10, which is useful as a component of a resist material of claim 20. This resist material is useful as a component of a chemically-amplified resist material of claim 21 and can suitably be used in a pattern forming process of claim 22. As explained above, in the monomer of claim 3, the alicyclic group R_{1b} is attached to a methylene carbon (i.e., the carbon of $-\text{COR}_4\text{R}_{1b}$), and the soluble group (i.e., $-\text{C}(\text{CF}_3)_2\text{OH}$) is attached to another methylene carbon (i.e., the carbon of $-\text{CR}_2\text{R}_3$). Therefore, the molecule will have greater freedom in the relative positions of the soluble group to the alicyclic group and vice versa. As a result, when the resist material of claim 20 is applied to a substrate in the pattern forming process of claim 22, it is expected that the soluble group, which is hydrophilic, takes a first position on the surface of the substrate and functions as a so-called adhesive group for firmly attaching the

resist film to the substrate, and in contrast the alicyclic group, which is not hydrophilic, takes a second position on the surface of the resist film and provides the resist film with water repellency and etching resistance (see paragraphs [0007] and [0008] of the specification). These first and second positions can be taken sufficiently by the above-explained special structure of the compound of formula (3) of claim 3.

In contrast, in formulas (I) and (II) of Ito et al., there is less freedom in relative positions of the soluble group to the alicyclic group and vice versa, due to the position of the norbornylene group in the connecting main chain. As a result, the resist film derived from formula (I) or (II) of Ito et al. will have more limited characteristics in terms of adhesion to substrate and etching resistance, as compared with the resist film of the present invention. This is because the above first and second positions cannot be taken sufficiently, due to the structure of the formulas (I) and (II) of Ito et al.

Thus, that the structural difference between formula (3) of claim 3 and formulas (I) and (II) of Ito et al. is very significant, and the assertion in the paragraph below formula (II) on page 4 of the Office Action is just impermissible hindsight. Accordingly, reconsideration and withdrawal of the obviousness rejection over Ito et al. are respectfully requested.

The rejection of claims 3, 6, 9-12, 18 and 20-24 under 35 U.S.C. §103(a) over Komoriya et al., US 2003/0232940 is also respectfully traversed.

This rejection is similarly flawed because the structure of formula (IV) of Komoriya et al. (TFMA-BTHB-NB in paragraph [0165]) is the same as that of formula (I) of Ito et al. (see NBHFATFMA in Fig. 1 on page 524). Accordingly, claim 3 and its related independent claims 10 and 20-22 and all of their dependent claims 6, 9, 11, 12, 18, 23, and 24 are not rendered *prima facie* obvious by the structurally different compounds disclosed in Komoriya et al. Reconsideration and withdrawal of the rejection are accordingly, respectfully requested.

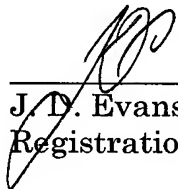
In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

If there are any questions regarding this Reply or the application in general, a telephone call to the undersigned at (202) 624-2845 would be appreciated since this should expedite the examination of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038788.58117US).

Respectfully submitted,

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